EcoOnline™

Solar Roof Mounted Fan Manual

Installation Manual - Revised 26/01/2014

EcoOnline™ .com.au
energy smart solutions

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1 Key Terms

This manual was written to follow guidelines and recommendations given in:

- 'HAZPAK' produced by the work-cover authority
- Incolink Safety Handbook

Please take the time to read the entire manual before starting any work. Particular attention should be given to text contained in the following key terms.

Please note EcoOnline has a strong product safety policy; do not install products without reading safety guidelines in the manual. Please report any product safety issues or near misses to info@EcoOnline.com.au no matter how trivial.

DANGER	Indicates a **SAFETY** issue that **is likely to** cause injury or death if the user does not follow the instructions.
WARNING	Indicates a **SAFETY** issue that **may** cause injury or death if the user does not follow the instructions.
CAUTION	Indicates a **SAFETY** issue that **may** cause injury or property damage if the user does not follow the instructions.
Read Carefully	Refers to **critically important** information related to the **correct functioning** of the unit.
Tip	Refers to useful information for the **optimal operation** of the unit.

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2 Pre-Installation Suitability & Safety Checklist

The following outlines mandatory suitability and safety requirements for installing an EcoOnline™ Solar Attic Fan. Please read carefully, if any of the following requirements cannot be meet this unit should NOT be installed.

DANGER	Due to the potential of falling from heights, we recommend that the installation of the unit on a roof should only be undertaken by a professional installer unless you are accustomed to and confident of performing the work safely.
WARNING	At present this fan system is **not recommended for installations in cyclonic regions C or D,** or **on houses situated on top of hills exposed to extreme winds.** It is the responsibility of the installer to consider wind loading issues as per see AS/NZS1170.2.2011.
WARNING	**Warning:** this unit is **rated not for bush fire prone areas**.
WARNING	When installing this unit air intake eave grills **MUST** be installed. Failure to do so could create **negative pressures in the roof cavity and house** which could interfere with proper fluing of **carbon monoxide** stemming from combustion heating appliances.
CAUTION	This unit is **to be installed on relatively flat concrete tile or metal roofs ONLY**, not recommended for highly modulated roof tiles due to the difficultly of flashing.
CAUTION	With the 5 anchor points for the 20W unit should withstand particular strong winds, however for regions which experience exceptionally strong gale force winds we **recommend a professional installer advise you on wind load issues.**
CAUTION	Building regulations vary from state to state and **MUST** override any instructions supplied in this manual. It is the responsibility of the purchaser/installer to check that installations comply with any relevant state laws and regulations.
Read Carefully	The EcoOnline™ Solar Attic Fan requires access to the roof cavity to secure metal strips from underneath the unit to the roof battens.
Read Carefully	For metal roofs the unit requires the installation of about 4 eaves grills per unit to aid air flow.

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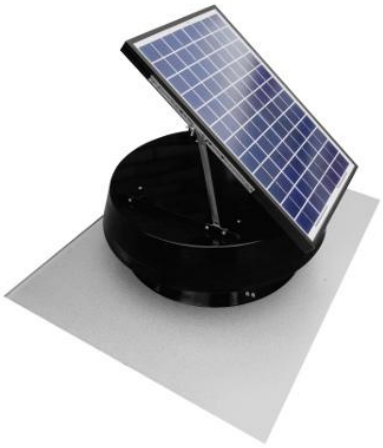
3 Warranties

EcoOnline™ offers the following Warranties on the solar attic fan:

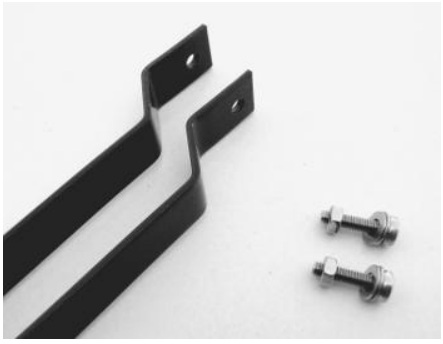
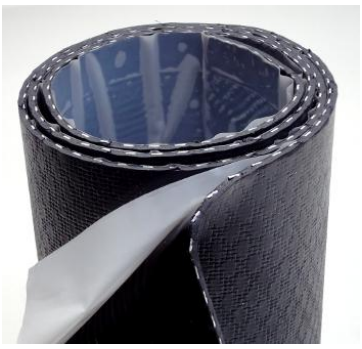
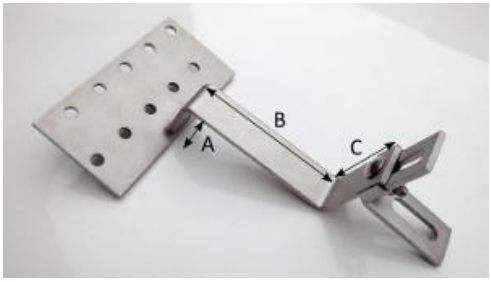
- 2 year return to base Motor Warranty
- 2 year return to base Thermostat Warranty
- 20 year return to base solar PV panel Warranty

See EcoOnline.com.au Terms and Conditions page for further details.

4 Included Components

Single Panel Unit	For Bi-Panels Unit ONLY	For Bi-Panels Unit ONLY
		
1 × 10W or 20W Solar Fan **1 ×** Zincalume flashing template.	**1 ×** 10W or 20W Solar Panel with **1 ×** 12m PVC wire with connector	**1 ×** Parallel connector

5 Additional Components (supplied only upon request)

Wind Proofing Struts	Extra Flashing	Solar Roof Hooks
		
1 × Wind proofing struts + nut and bolt set (for cyclonic and high wind areas for the 20W version	**1 ×** Flexible butyl adhesive flashing strip (140mm x 1000mm)	**1 ×** 304 Stainless solar roof hook Dimensions: A = 47.5mm,B = 117.5mm,C = 60mm

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6 Tools Required

- Leaver action tin snips
- Clamps
- Rivet gun
- Grinder with masonry cutting blade (optional for roof tiles)
- Hand powered drill with socket and drill bits
- Marking pen
- Industrial Ladder (with means to secure the ladder at the base and top)

7 Extra Materials Required

- For some roof tiles extra flashing may be required
- Silicon gun and sealant (with masking tape)
- Rivets
- Solar panel mounting roof attachment points for bi-panel version (not included).
- Eve grills (air inlets)

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8 Safety When Working at Heights

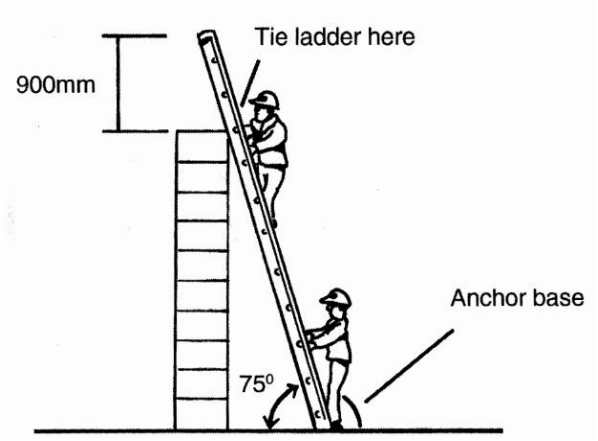
DANGER

WHEN WORKING AT HEIGHTS - SAFETY COMES FIRST. A person can easily fall off a ladder or roof and be seriously injured. For installations on a roof pitch greater than 22° and/or a double story house we strongly recommend a highly competent professional installer install your solar attic fan. The installer **MUST** use an appropriate safety harness.

The installer should always take the necessary safety precautions:

- Choose an appropriate day: cool, dry, calm and partly cloudy.
- Plan out your install: make sure you have all required components, tools and have plenty of allocated time.
- Only work at heights when you are well rested and alert.
- Never work alone, always work with at least one other person.
- Always use a safety harness or fall arrest system attached to appropriate roof anchor points.
- Wear clothes that fit well but that do not restrict movement.
- Use proper non-slip shoes.
- Use sunscreen.

8.1 Ladder Safety



The chance of a falling from a ladder should never be underestimated. Use only solid **industrial grade** ladders in good repair that have been checked for faults.

Note: even a small unexpected movement of the ladder, such as a small slip, can cause loss of balance and result in a fall.

The ladder should be placed on solid ground and should ALWAYS be securely anchored at the base and secured at the top to prevent slipping. Always have one person

9 Choosing a place to install the Solar Attic Fan

When choosing a location for your attic fan you should consider the following:

- You'll need roof cavity access to fasten attachments under the unit.
- Unit should be free from shading (this includes overhead cabling or TV antennas).
- Should be installed preferably between roof rafters.
- The unit should be installed as high up on the roof as possible.
- For a metal roof the flashing base should go under the ridge cap.
- For a tile roof the unit should be installed at **least three tiles down** from the ridge capping so as not to damage it during installation.

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10 Optimal Solar Panel Orientation

10.1 Single Panel Unit

The solar panel should be orientated so that peak power production coincides with the maximum temperatures in the daily diurnal cycle in summer (which typically peaks at between 2-3pm). Hence, the panel should be tilted at about at L - 10° (where L is your latitude) and tilted west toward the sun's position at between 2-3pm.

10.2 Bi-Panel Unit

Bi-panel units should have a first panel facing the 11am-12noon sun with the second panel facing the afternoon sun to create a broad power peak. It does not matter which panel faces the afternoon sun. Since the unit's solar panel is adjustable it is recommend that the unit's solar panel face the afternoon sun, while the second panel can be mounted flat on a north facing roof.

11 Plan your installation first

For your added safety the EcoOnline™ Solar Attic Fan comes with a separate universal square flashing template so that most of the flashing work can be done conveniently and safely on the ground minimizing time spent on the roof.

1. Place the template around the unit and mark the overlap lines (40mm overlap).
2. On the roof, use the template to plan your installation.
3. Mark all screw holes, bend lines, cut lines on the square flashing and on the roof.

12 Attaching the flashing

WARNING

When working with power or hand tools always follow the safety instructions.

- Where appropriate wear the recommended personal protective equipment, such as **gloves, safety glasses, respiratory and hearing projection**.
- Make sure electrical cables are kept away from any water and from foreign objects which pose **a potential cable severing or crushing hazard**.
- When using glues, solvents or sealing agents make sure **you know and seek the proper first aid** in case of an accident.

1. Cover a table with a plastic drop sheet and lay the unit on the edge of the table.
2. Apply a small (2mm diameter) spherical bead of silicon around the top base of the unit.
3. Lay the flashing in place on the silicon.
4. Clamp the top overlap area of the flashing halves to the base of the unit.
5. Drill one rivet hole in this top overlap area and rivet the three pieces in place (rivet from the bottom).
6. Re-align the two halves of the flashing so that the bottom edge runs straight.
7. Starting from this top rivet, drill and rivet the next two holes on either side.
8. Follow clockwise and anti-clockwise on either side until the bottom is reached.
9. The last rivet should fasten the bottom section.
10. Do not rivet the two opposing ends first as this may create modulations in the mid section of the flashing.
11. Place more silicon all around the edge of the flashing (top and bottom) and rivet points.
12. Finish by drilling, cutting and bending the flashing appropriately by using your markings and the edge of the

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table, make sure the flashing runs flat.

13 Finishing

a) Attach the metal securing strips to the body of the unit.
b) Fix the appropriate angle of the solar panel making sure the bolts holding the panels are done up tight.
c) Cut the solar panel wind proofing Aluminium side struts to length and install (20W version only).
d) On the roof, remove tiles by sliding top tiles up and removing the bottom tiles for cutting (if applicable).
e) For a metal roof undo ridge capping screws, cut a 45cm diameter hole using tin cutters.
f) Insert the finished unit in place and secure using fixing screws.
g) Put tiles back and run silicon under any side tiles and side flashing overlaps.
h) Finally remove the solar panel cover.
i) In the roof cavity, secure the metal strips using a screw to the nearest roof batten.

CAUTION

During the installation the solar panels must be disconnected to prevent the unit from inadvertently activating during the install. The motor can be burn out if the unit activates while the fan blades are not free to move.

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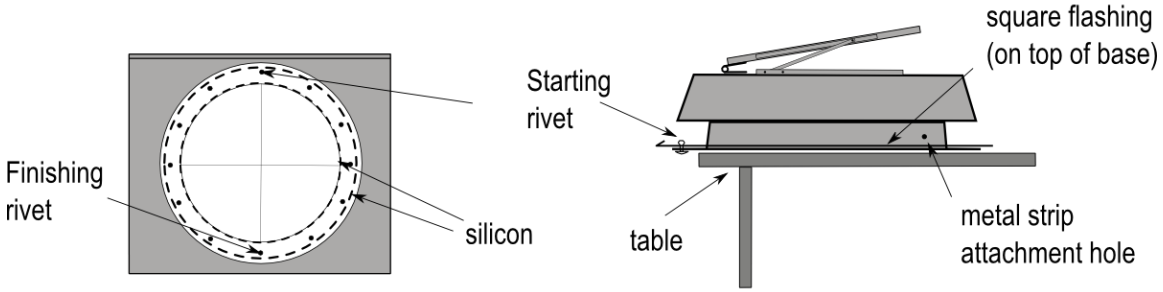
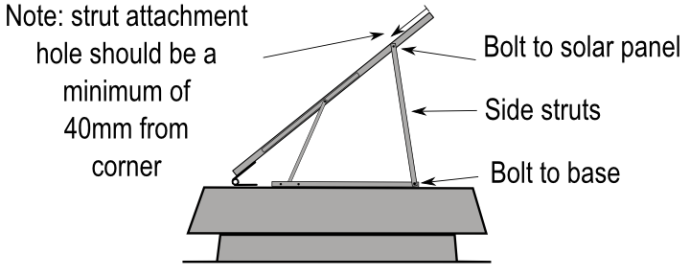
Square flushing attachment

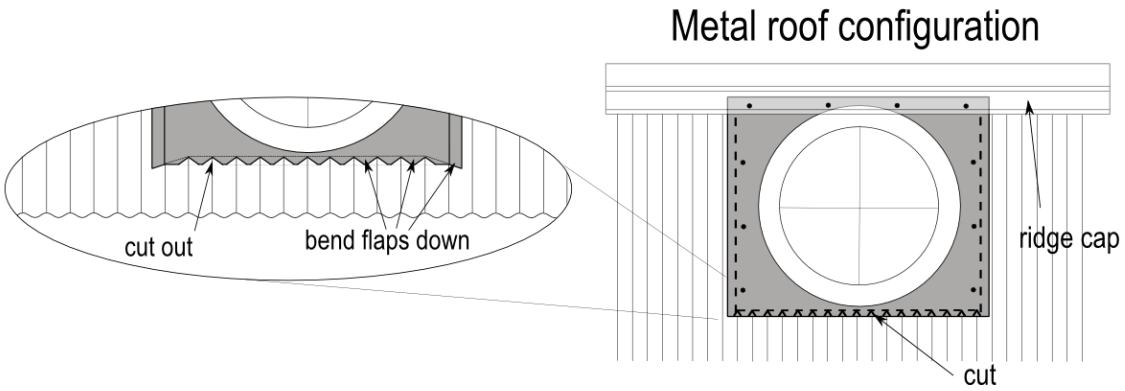


Installing wind proofing side struts

(For 20W version only for strong wind areas)



Metal roof configuration



WARNING	To minimize time spent on the roof, most of the flashing work should be performed on the ground.
CAUTION	**Important: ALWAYS** install wind proofing struts for the 20W version when mounting the unit in cyclonic and/or strong wind areas.

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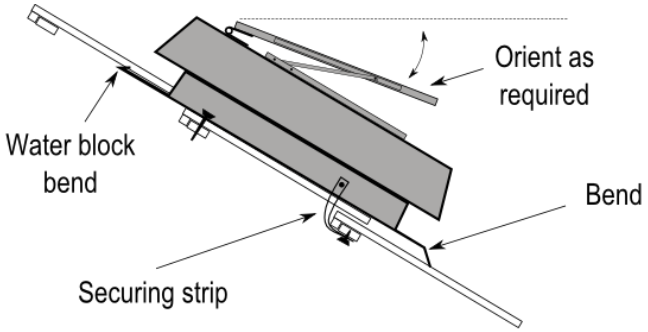
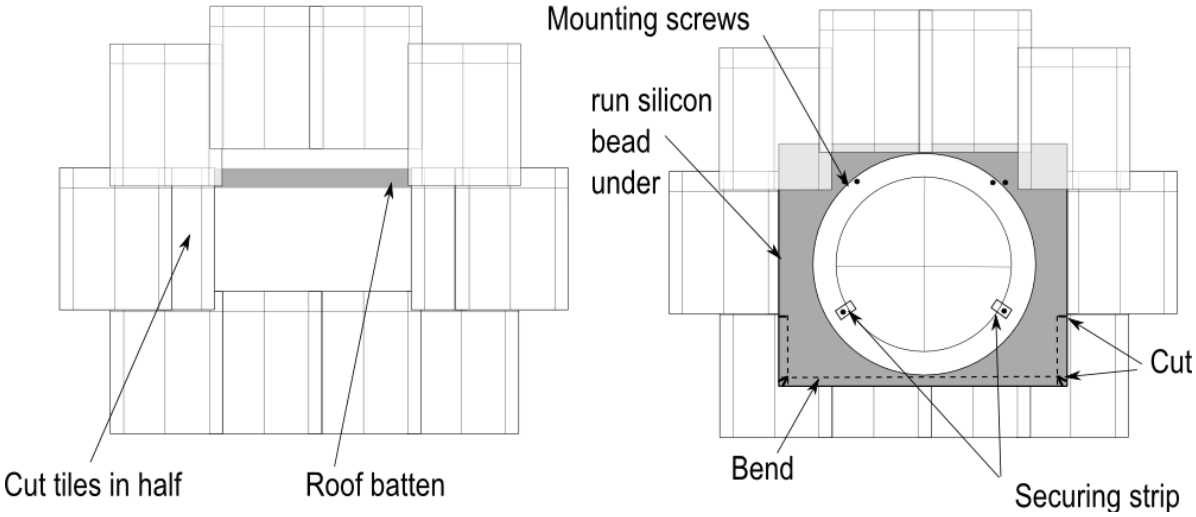


Option 1
(tile trimming required)



CAUTION	**Important:** The securing screws **MUST** be drilled through the unit's thicker gauge steel circular flashing and NOT just through the add-on square flashing.
CAUTION	Some non-flat roof tiles may require extra flashing to seal the bottom run off of the unit. If in doubt seek advice.

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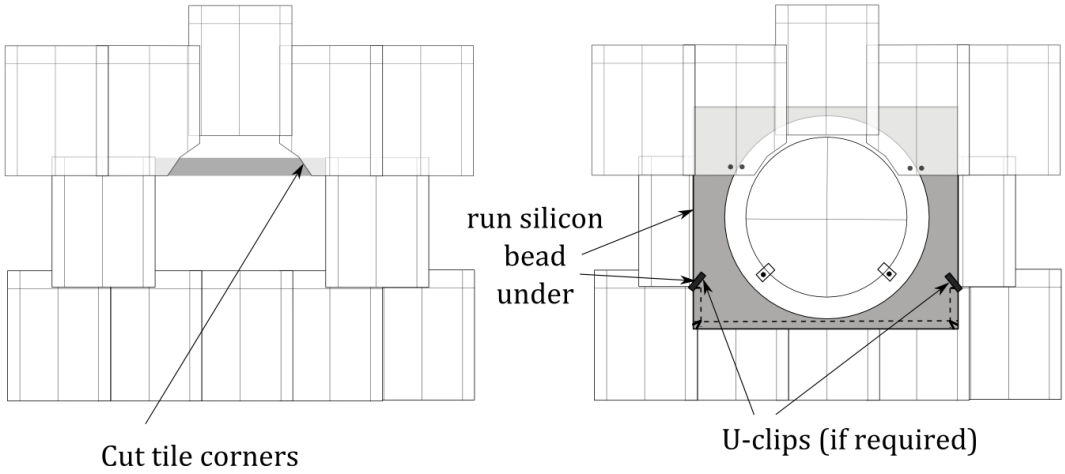
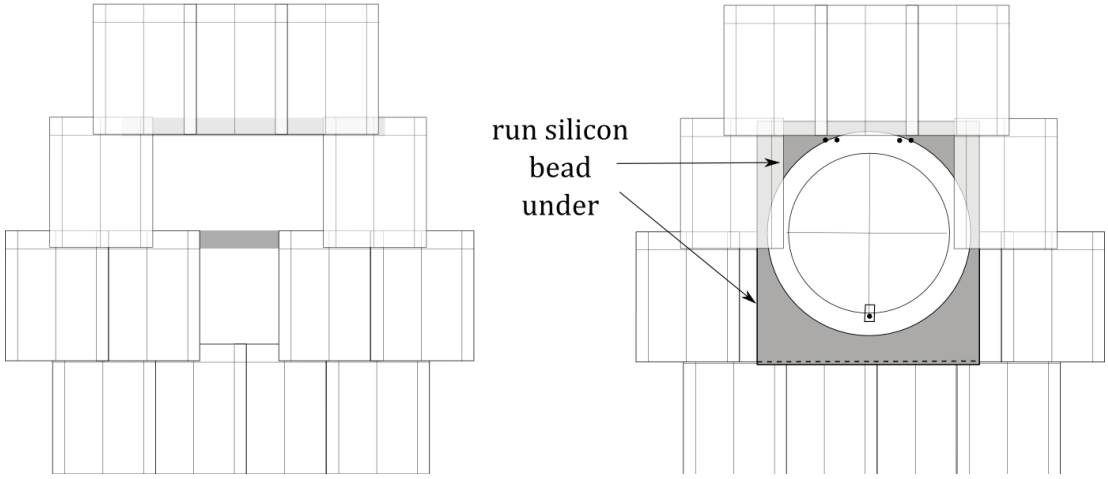
Option 2
(tile trimming required)



Option 3
(no tile trimming required)



CAUTION

Option 3, may require the square flashing base to be attached beneath the unit's existing circular flashing, as opposed to on top of the unit's flashing.

14 Adjusting the Thermostat

The activation temperature of the fan can easily be adjusted using the existing (27°C) fixed temperature thermostat. For example if you require the unit to activate more often (i.e. a at lower roof cavity temperature) simply cut and extend the thermostat wire and situate the thermostat higher in your roof cavity.

On the other hand situating the thermostat lower in your roof cavity will result in the thermostat sampling cooler air - in this case the unit will not come on as often.

If a complete removal of the thermostat is required simply cut off the thermostat and join the two resulting wires

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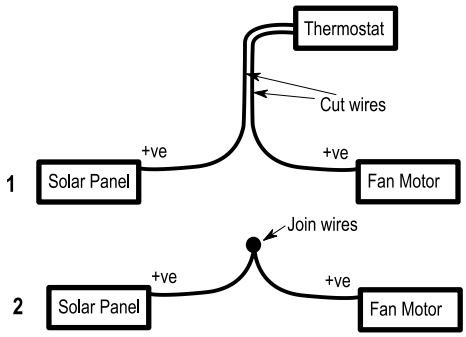
(see figure below).

Removing the Thermostat



WARNING	Note: when extending/altering wiring, the extra wire should be **double insulated dual core PVC cord with minimum copper area 0.75m^2**. All solder joins must be sealed using a **good quality adhesive lined heat shrink.**
WARNING	Never run a 12-24V cable near or in the same compartment or conduit as other 240V cables due to the chance of mistaking the two cables at some later point in time during installation or servicing.

15 Trouble Shooting

Problem	Cause	Solution
Unit in full sun and not working	Thermal switch prevents the unit from activating below 27°C	No fix required
Flashing will not lie flat around the fan base	Rivet holes were not aligned properly	Create a small bend running the length of the flashing, alternatively, bend U clips and use them to clip the flashing to the roof tile on either end, silicon in place.

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